


10. (Thrice Amended) A system for maximizing satellite constellation coverage at predetermined local times for a set of predetermined geographical locations, the satellite constellation having a first coverage and including at least two desired satellites wherein each of the desired satellites have a trajectory associated therewith and a relative [configuration] orbit within the satellite constellation, the system comprising:

 a processor operative to determine a period of orbit for each of the desired satellites to determine a time dependent coverage of the satellite constellation based on the orbit period and the trajectory of each of the desired satellites, to determine a second coverage based on the time dependent coverage which provides maximum coverage by the satellite constellation at the predetermined local times and the predetermined geographic locations, and to tilt the trajectory of [at least one of] each of the desired satellites within the satellite constellation to obtain the [a] second coverage [based on the time dependent coverage, the second coverage providing maximum coverage at the predetermined local times for the set of predetermined geographic locations]; and

means for generating command signals for modifying the trajectory of each of the desired satellites based on the tilted trajectory.

#### REMARKS

The Examiner has rejected claims 1-9 under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner has also rejected claims 1-19 under 35 U.S.C. § 103(a) as being unpatentable over *Drain* in view of *Westerlund*, *Uphoff*, or *Dulck*.

#### The § 112 Claim Rejections:

The Examiner rejected claims 1-9 under 35 U.S.C. § 112, second paragraph, and specifically claim 1, line 11, as the phrase "the tilted trajectory" lacks antecedent basis.

Claim 1 has been amended as set forth above to overcome the § 112 antecedent basis rejection.

**The § 103 Claim Rejections:**

The Examiner has rejected claims 1-19 under 35 U.S.C. § 103(a) as being unpatentable over *Drain* in view of *Westerlund*, *Uphoff*, or *Dulck*. The Examiner specifically objected to the newly added limitation of relative "configuration" as being too broad. The Applicants respectfully disagree with the Examiner's reading of that phrase, but have amended the claim to clarify the term's meaning. Claims 1 and 10 now require that each satellite have a relative orbit, which means that the satellites within the constellation maintain the same orbits relative to each other before and after their trajectories are modified relative to the ground plane. Thus, in accordance with the present invention, the overall performance of the satellite constellation can be improved without any alteration to the space segment hardware. Moreover, the claimed invention does not require tilt of a physical object, but rather a tilting of the trajectory of the satellites to reorient the satellite constellation as a function of the time dependent coverage of the satellite constellation prior to tilting. Tilting the trajectories of the satellite is not related to the inclination angle of the satellites.

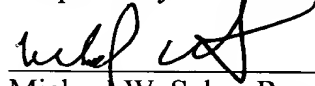
Conversely, the *Westerlund* reference, which the Examiner relies heavily on as a motivation for Applicant's claimed invention, teaches orienting the spin axis of the satellite by tilting the satellite body. Neither the *Westerlund* reference nor any other reference of record, teaches tilting the orbits of the satellites in order to maintain the satellites in the satellite configuration both at the same trajectory and relative orbit. Additionally, none of the references teach maximizing the coverage at the desired local time and location in order to solve the coverage issues that exist in current satellite constellation systems. Further, neither

the *Westerlund* reference nor any of the other references of record teach the step of determining a second coverage for the satellite constellation where the second coverage provides maximum satellite coverage at a desired time and geographic location to provide maximum availability of the systems to users during peak hours.

In view of the foregoing, none of the references teach, nor suggest, alone, or in combination, Applicant's claimed invention of claims 1 and 10. Furthermore, claims 2-9 and 11-19 which depend from claims 1 and 10, respectively, are deemed to be allowable over the art for the same reasons set forth above in connection with claims 1 and 10. Accordingly, it is respectfully submitted that all objections and rejections of record have been overcome and that all pending claims are in a condition for allowance.

If the Examiner should have any questions, he is urged to contact the undersigned.

Respectfully submitted,



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#### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to the Assistant Commissioner of Patents, Washington, DC on September 18, 2000.

  
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